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Status and distribution of the Loggerhead Shrike in western Canada

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Abstract

During the 1987 nesting season, the status and distribution of Loggerhead Shrikes *Lanius ludovicianus* were surveyed in the southern parts of Manitoba, Saskatchewan, and Alberta. Roadside counts were conducted from automobiles on survey routes in areas of the provinces suspected of retaining shrike populations. A density of more than 10 breeding pairs per 100 km was found on three routes in western Saskatchewan and one route in extreme southwestern Manitoba. Moderate densities of two to 10 breeding pairs per 100 km were found on 27% of the routes. Elsewhere, shrikes were sparsely and patchily distributed. Saskatchewan has a substantial breeding population of shrikes, whereas smaller, contracting populations occur in Alberta and Manitoba.

Introduction

On the basis of reports of declining Loggerhead Shrike *Lanius ludovicianus* populations in both Canada and the United States, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) has designated the species as "threatened" (Cadman 1985). Cadman (1985) concluded that:

- (1) the species is in danger of extirpation in the Canadian Maritime provinces and Quebec;
- (2) the species has reached a "tenuous stability" in Ontario; and
- (3) despite a decline, the species is in less danger of extirpation in the Prairie provinces because of a larger initial population.

The changing status of the species has also been documented in reports submitted by regional observers to the journal *American Birds*, which is published by the National Audubon Society of the United States. The Loggerhead Shrike has been included on the National Audubon Society's "blue list" of declining birds in every year since 1972 (Tate 1986). Confirmation that the shrike is in trouble was provided by analyses of data from the Christmas Bird Count (CBC) (Morrison 1981) and the Breeding Bird Survey (BBS) (Robbins *et al.* 1986). Although declines were most severe in eastern North America, Great Plains populations also declined.

The threatened status of the shrike has led to speculation as to possible causes of and remedies for the decline. We undertook preliminary studies in 1987 to evaluate the current dis-

tribution and abundance of the species on the Canadian Prairies. The results of these studies are presented in this note.

Methods

To determine the status and distribution of Loggerhead Shrikes in the Prairie provinces, it was necessary to survey an area of approximately 924 000 km². The survey consisted of roadside counts conducted from automobiles in areas considered to harbour Loggerhead Shrikes. National Topographic Series maps at a scale of 1:250 000 were obtained for the study areas. Two automobile routes were plotted on each map, one on the east half and the other on the west half of the mapsheet. Routes varied in length from 127 to 402 km, but most were between 200 and 300 km.

Surveys were conducted between 07:00 and 19:00 during the period 17 June – 15 July in Alberta and Manitoba and 15 June – 15 July in Saskatchewan. Routes followed lightly travelled back roads as much as possible, although some sections unavoidably followed provincial highways. Participants drove at 50–70 km·h⁻¹ along the routes and scanned the countryside for Loggerhead Shrikes. The light colour of shrikes — particularly their flashy contrast of black and white when in flight — and their habit of perching on wires, treetops, or other conspicuous perches render them readily observable. Single birds were considered to represent breeding pairs if they were at least several hundred metres from shrikes known to belong to a pair and if they were in typical nesting habitat. (However, the area where a bird was observed was scanned with binoculars, and an attempt was made to verify if the bird belonged to a breeding pair or a fledged brood. Occasionally a nest was located, but time limitations prevented exhaustive scrutiny in most situations.) Observations were plotted on maps, and relevant information was recorded. Observations not on the formal routes were also recorded for inclusion with other incidental observations in the regional database for the species.

The senior author (EST) designed the survey system and served as overall coordinator for the project; the three junior authors coordinated and conducted the provincial surveys, with the assistance of competent volunteers. Many interested people supplied records of their casual observations of shrikes.

Results

Alberta

The 1987 surveys were conducted along routes covering most of the province between the Saskatchewan border and 114°W, and from the US border north to 54°N. Shrikes were located primarily east of 113°W and south of 52°N (Fig. 1). On survey routes south of 52°N, the density of shrikes averaged 0.69 breeding pairs per 100 km (Table 1). No birds were seen on regular survey routes north of 52°N. Incidental observations were made largely south of 52°N, with the exception of some late-summer observations near Edmonton, Wainwright,

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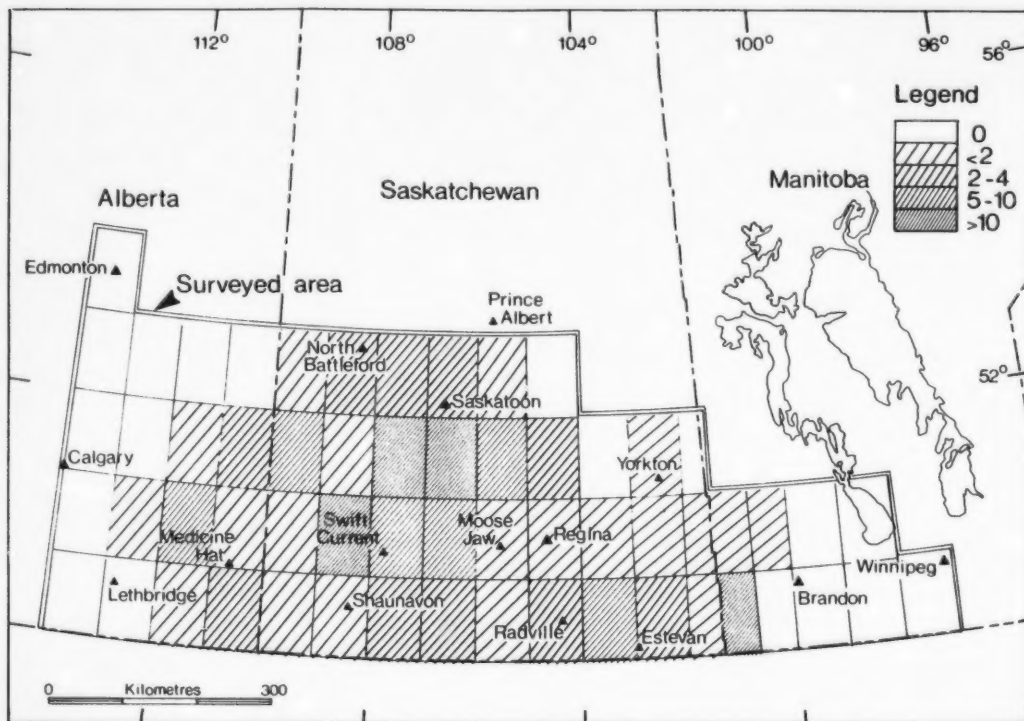
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Figure 1

Number of Loggerhead Shrike breeding pairs per 100 km of survey route in Manitoba, Saskatchewan, and Alberta, 1987. Each block represents half of a 1:250 000-scale National Topographic Series mapsheet and contains one survey route.



and Drumheller.

A nesting "hot spot" was located between the Red Deer and South Saskatchewan rivers in southeastern Alberta (centred at about 50°54'N, 110°15'W). Another area with substantial numbers of nesting shrikes was located south of Medicine Hat and centred on 49°15'N, 110°30'W.

Saskatchewan

Southern Saskatchewan was divided into four regions—north and south of 51°N and east and west of 106°W (Cadman 1985):

(1) *The Southeast Region*—The 1987 surveys found an average of 1.29 breeding pairs per 100 km of survey transect, a figure exceeded only in western Saskatchewan. Shrikes were found in moderate density in an arc from Estevan to Radville (Fig. 1). Incidental observations in the Regina area were considered to reflect a concentration of observers rather than of shrikes. Intensive reconnaissance of the Souris Valley in extreme southeastern Saskatchewan, an area with much apparently suitable shrike habitat, revealed only one shrike, although a few others were observed on adjacent uplands (Adam 1988).

(2) *The Northeast Region*—Shrikes were found nesting in substantial numbers near Last Mountain Lake in the southwest corner of this region. Numbers declined to the northeast, where the country becomes progressively more forested.

(3) *The Southwest Region*—In 1987, shrikes were found to be common in the Shaunavon and Swift Current areas. Densities

on survey routes in this region averaged 2.60 breeding pairs per 100 km of route (Table 1).

(4) *The Northwest Region*—The 1987 survey results showed an average density of 3.52 breeding pairs per 100 km in this region.

Manitoba

Southern Manitoba was divided into four regions separated by 50°N and 98°W for the purposes of this survey (Cadman 1985). No routes were placed in the Northeast Region, as shrike densities there were considered to be very low. However, five casual observations were reported in the region. In the Southeast Region, no shrikes were observed along the lone route that was surveyed, and only one casual observation (near Winnipeg) was reported.

The northwest and southwest were combined in one region for this analysis. Loggerhead Shrike densities averaged 1.75 breeding pairs per 100 km in the western region (Table 1). Fourteen casual observations were reported, one from as far east as Delta. The extreme southwest proved to be the shrike stronghold in Manitoba. One route had 10.7 breeding pairs per 100 km.

Discussion

This study confirms Cadman's (1985) conclusion that the distribution of Loggerhead Shrikes in the Prairie provinces has contracted from its maximum extent (Fig. 2), particularly in Alberta and Manitoba. The species has held its ground more successfully in Saskatchewan. Systematic surveys dur-

Table 1

Occurrence of Loggerhead Shrikes by region in the Prairie provinces on survey routes during 1987

Province/ region	No. of routes	Total length of routes (km)	No. of probable breeding pairs on routes	Mean no. of probable breeding pairs per 100 km ^a	SE ^a	No. of off-route observations
Alberta						
North of 52°N	4	900	0	0		6
South of 52°N	12	2895	20	0.69	0.24	176
Saskatchewan						
Southeast Region (south of 51°N and east of 106°W)	10	1971	26	1.29	0.35	21
Northeast Region (north of 51°N and east of 106°W)	6	1175	12	1.00	0.56	3
Southwest Region (south of 51°N and west of 106°W)	8	1473	38	2.60	0.56	3
Northwest Region (north of 51°N and west of 106°W)	8	1290	45	3.52	0.84	13
All Saskatchewan routes	32	5909	121	2.04	0.34	40
Manitoba						
Northeast Region ^b (north of 50°N and east of 98°W)	0	0	0	0	0	5
Southeast Region (south of 50°N and east of 98°W)	1	261	0	0	0	1
West Region (west of 98°W)	6	1380	31	1.75	1.63	235

^aMeans and standard errors were calculated by the "jackknife" technique (Sokal and Rohlf 1981).^bNo routes were placed in this region, as shrike densities were considered to be very low.

ing 1987 produced a lot of zero counts on routes around the perimeter of the range (Fig. 1). However, incidental observations of shrikes were made in many of these blocks, so it seems reasonable to consider the blocks with less than two observations per 100 km of survey route as constituting a stratum with a sparse and patchy distribution of shrikes. That stratum contained 66% of the 55 survey routes and represented blocks totalling 615 000 km².

Densities of two to 10 breeding pairs per 100 km were considered to be indicative of a moderate, more evenly distributed population. Those densities were found on 27% of the routes, or blocks totalling 249 000 km². Four routes (representing 7% of the survey area or 66 000 km²) had more than 10 breeding pairs per 100 km, indicative of the most productive range; these were three adjacent routes in western Saskatchewan and one in the extreme southwestern corner of Manitoba (Fig. 1).

Incidental observations pinpointed certain localities with dense populations that were not detected on the survey routes. These included the Consul-Govenlock area west of Shaunavon in southwestern Saskatchewan and the Jenner-Bindloss area north of Medicine Hat in Alberta.

The 1987 surveys indicate that substantial populations still breed in Saskatchewan. However, indications are that numbers

are down considerably from those recorded by the BBS in the late 1960s and reported by naturalists prior to the 1960s (Cadman 1985).

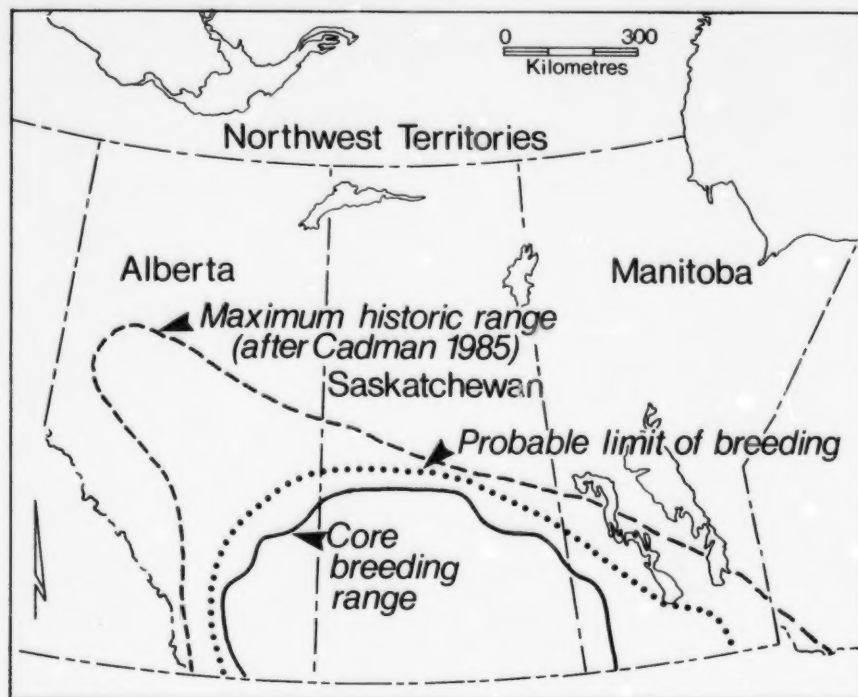
In both Alberta and Manitoba, the core breeding ranges have contracted substantially, and there were probably fewer than 1000 breeding pairs in each province. Because of their low numbers and limited distribution, Loggerhead Shrike populations in Alberta and Manitoba are vulnerable both to changes in land use and agricultural practices and to random climatic events. Population status should be closely monitored, and additional studies should focus on determining the factors limiting shrike numbers.

Although the techniques employed in this survey were adequate to provide the information required, several modifications should be considered for future surveys of this type: (1) Survey routes should be confined to lightly travelled roads on which it is possible to drive slowly and make occasional stops.

(2) Surveys should be discontinued when the ambient temperature exceeds 25°C and continued in the evening when temperatures have dropped.

(3) Surveys should be conducted when the majority of broods have just fledged (late June). In most areas, shrikes are most visible at that time, because adults are actively feeding young

Figure 2
Loggerhead Shrike breeding range in western Canada, 1987



and the newly fledged young are beginning to move. However, the best time for surveys may vary between regions. In Alberta, where most shrike nests are in low, sparse shrub cover, the adult birds are easily seen, so that surveys could be effective in early June. In Manitoba, shrikes are found in habitats with aspen patches and shelterbelts with trees up to 20 m in height; in this more extensive cover, it would be easier to locate breeding pairs after the young have fledged.

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